

Multisensor Aero-geophysical Survey



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Introduction

- Aero-Geophysical Surveys are conducted using geophysical sensors installed in an aircraft (Fixed wing/Helicopter).
- The primary sensors are Magnetic, Spectrometric, Gravity and Electromagnetic.
- It is useful for oil and ground water exploration, agriculture, land use planning, environmental and geohazardal studies
- The global best practice is to cover the entire country through regional surveys and disseminate the data to all stake holders.



Introduction

- This approach initially was adopted by Australia and Canada, later by many African countries like Nigeria, Uganda, Botswana, Namibia, Senegal, Morocco, Ghana etc.
- Has led to major investments in the mineral sector and identification of new potential areas for mineral and oil in their countries.
- Australia has 90% coverage by airborne geophysics, whereas India has 18% only.
- India with a vast mineral potentiality, presently does not possess a country wide baseline aero-geophysical data to share with the stakeholders



National Airborne Geophysical Mapping Programme (NAGMP)

- A project was conceived in 2010, to cover the entire country including the Peninsular Plateau, Indo Gangetic Plains, Northern Mountain Region, Territorial waters and Exclusive Economic Zone
- An expert committee was formed comprising members from GSI, AMD, IIG, NGRI, ONGC, OIL, DGH, SOI etc. submitted a concept note on the project
- It was decided to cover the entire country with a uniform line spacing of 500 m at altitude of 120 m above ground level using magnetic and spectrometric sensors and gravity sensor wherever required
- A consultant was identified through a global tender to prepare a detailed project report, but MOA was not signed due budgetary constraints



Multisensor Aero-Geophysical Surveys over Obvious Geological Potential (OGP) areas

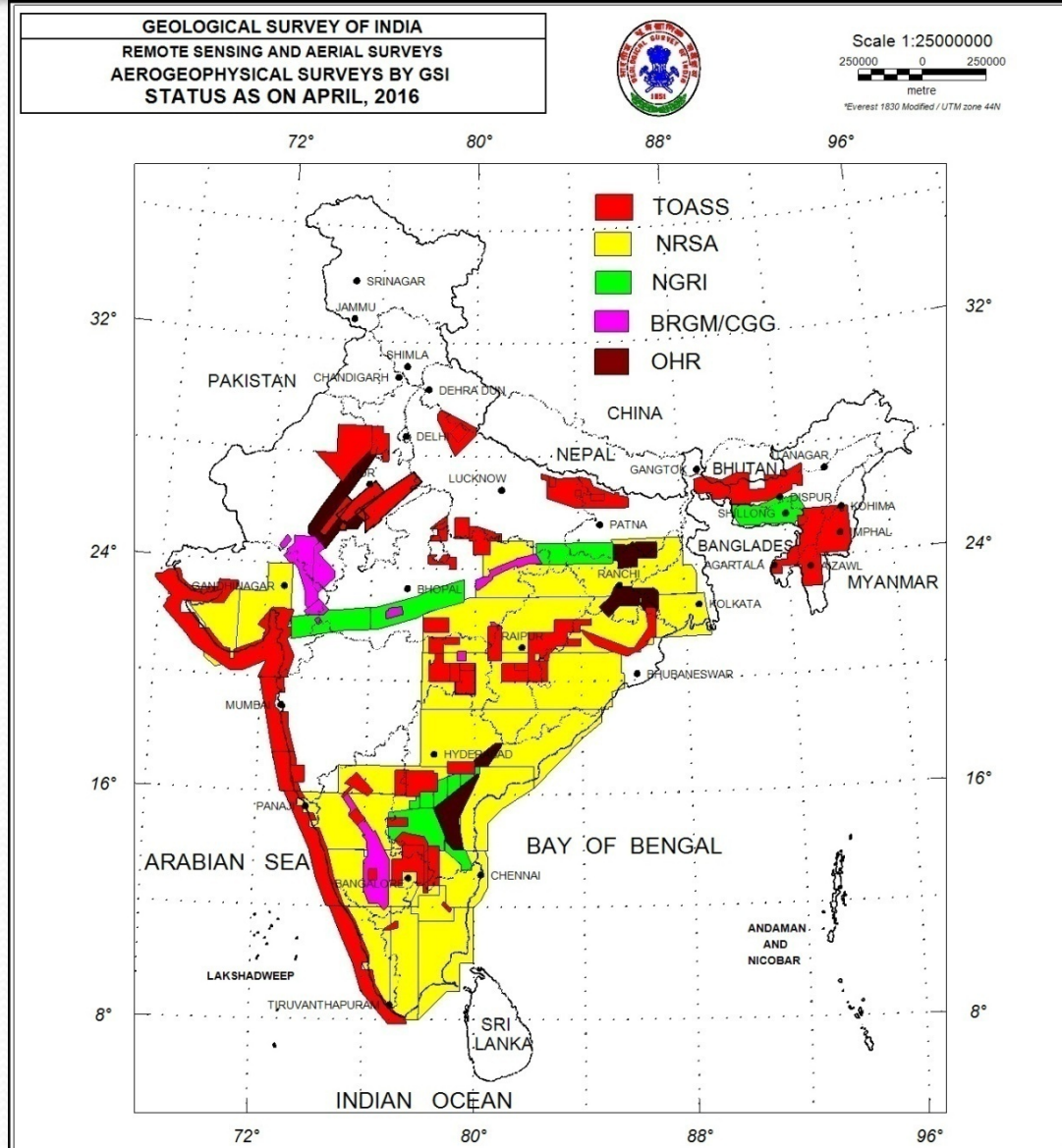
- The 1st GB meeting of NMET a presentation was made before the Hon'ble Ministers about the project. The GB decided to take up the project in phased manner.
- The NMEP notified in July, 2016 proposed to generate baseline aero-geophysical data, in the first phase, over primarily OGP areas within a period of three years, later to be extended to entire country.
- A consultant was engaged through a global tender, to prepare DPR, EOI and Tender management
- Two workshops were conducted which was attended by potential project implementing agencies (PIAs), Consultant, GSI and other Govt. organisations, to gather information and finalise the areas, survey parameters and sensors



Aero-geophysical surveys in the past and present by GSI

Status of Coverage

Project	Period	Quantum
OHR	1967-68	144,462 lkm 90,395 sq km
BRGM	1971-72	143,507 lkm 76,460 sq km
NGRI	1977-82	109,558 lkm 167,024 sq km
NRSA	1981-95	373,189 lkm 1,368,894 sq km
TOASS, GSI	1986-2016	653,850 lkm 546,659 sq km
Total		1,424,566 lkm 2,249,432 sq km





Detailed Project Report

The DPR was approved by Ministry of Mines. The main components of the DPR are:

- **Total area:** 0.80 million sq km in 3 years
- **Pilot project in the 1st year:** 0.270 million sq km
- **Project Implementing Agencies (PIAs):** Companies to be identified through global tendering process
- **Level:** Level 1 - Regional survey (Fixed Wing), Level 2 - Follow up Detailed surveys (Helicopter/Fixed Wing)
- **Sensors:** Level 1 - Magnetometer (gradiometry), Spectrometer
Level 2 – Combination of Magnetic/Spectrometric/Electromagnetic/Gravity/Gravity Gradiometry as per requirement
- **Survey Parameters:** Level 1 – Line Spacing 500 m, Flight Height 80 m above ground level, Level 2 – As per requirement
- **Scope of work:** Data acquisition, Processing and Interpretation of data
- **Project management:** An independent consultant for Technical supervision and Quality control will be engaged through global tender



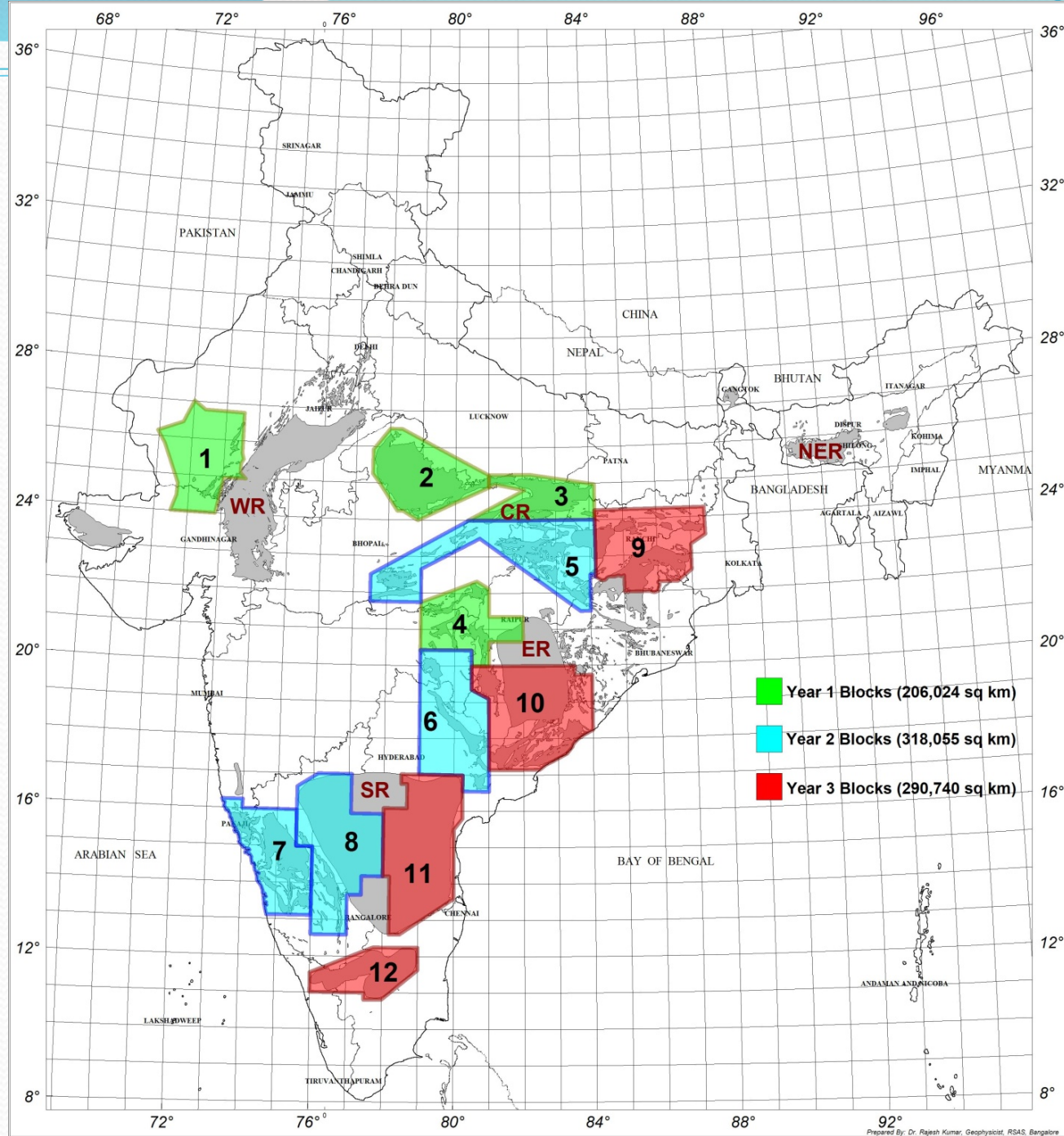
Year-wise Prioritised blocks

Area for Year 1:
2,06,024 sq km
Line Km:
7,55,421 L.km

Area for Year 2:
3,18,055 sq km

Area for Year 3:
2,90,740 sq km

Total Area:
8,14,861 sq km
Line Km:
29,87,824 L.km
12/26/2016





A High level meeting was held in Ministry of Mines attended by International experts, consultant and officers of GSI. Following decisions were taken:

- Line spacing is to be kept as 300m.
- Flight height to be maintained at 80m.

It was also decided to take up a pilot project to carry out surveys over the 4 blocks in the first year.



Present Status

- The following PIAs were selected based on their bids

Final result	Block IDs allotted	Line-kms	
McPhar	1	2,16,740	
Geoken	2	2,17,833	
IIC	3	1,44,657	
McPhar	4	1,76,191	
Total		7,55,421	
Total Cost including taxes			101, 24,67,737

- M/s IDP Geosciences (Private) Limited; United Kingdom [Consortium of Datacode, India (Lead Partner); Paterson, Grant & Watson Limited, Canada and International Geosciences Ltd, UK selected as **Technical Supervisor cum Quality Control** consultant through global tender at a cost of about Rs 10.09 Cr.
- **Survey is planned to start in February, 2017**



Thank You



Detailed Project Report

- The acquired data will be processed and interpreted at RSAS, Bangalore
- The interpreted data will be integrated with Geological, NGPM, NGCM and Satellite data in the ArcGIS or Geosoft platform
- Areas of high mineral potential will be identified and recommended for follow up surveys with close grid aero em, gravity & other surveys. This will follow ground integrated surveys-drilling (G-4) and auction able blocks will be demarcated.
- All the deliverables will be submitted for review to the QC consultant and GSI Officials before the acceptance
- The QC consultant will then merge and compile all data from different blocks
- GSI officials will monitor the entire process and also receive training
- All the PIAs and the consultant have to sign a confidentiality agreement with GSI